**Marine Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Osmoregulation WebQuest**

**Period: \_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_**

**Introduction**

Osmoregulation is the active regulation of the [osmotic pressure](http://en.wikipedia.org/wiki/Osmotic_pressure) of an [organism](http://en.wikipedia.org/wiki/Organism)'s fluids to maintain the [homeostasis](http://en.wikipedia.org/wiki/Homeostasis) of the organism's [water](http://en.wikipedia.org/wiki/Water) content; that is, it keeps the organism's fluids from becoming too diluted or too concentrated. Osmotic pressure is a measure of the tendency of water to move into one [solution](http://en.wikipedia.org/wiki/Solution) from another by [osmosis](http://en.wikipedia.org/wiki/Osmosis). The higher the osmotic pressure of a solution, the more water tends to move into it. Pressure must be exerted on the [hypertonic](http://en.wikipedia.org/wiki/Tonicity#Hypertonicity) side of a selectively permeable [membrane](http://en.wikipedia.org/wiki/Biological_membrane) to prevent [diffusion](http://en.wikipedia.org/wiki/Diffusion) of water by osmosis from the side containing pure water.

Organisms in aquatic and terrestrial environments must maintain the right concentration of [solutes](http://en.wikipedia.org/wiki/Solution) and amount of water in their body fluids; this involves [excretion](http://en.wikipedia.org/wiki/Excretion) (getting rid of metabolic wastes and other substances such as [hormones](http://en.wikipedia.org/wiki/Hormone) that would be toxic if allowed to accumulate in the [blood](http://en.wikipedia.org/wiki/Blood)) through organs such as the [skin](http://en.wikipedia.org/wiki/Skin) and the [kidneys](http://en.wikipedia.org/wiki/Kidneys).

**Purpose**

The purpose of this activity is to investigate how marine organisms maintain homeostasis.

**Learning Targets**

* Explain how organisms attempt to maintain a balance in their internal environment (pressure, salinity, nutrient level, temperature, metabolic rate, pH).
* Describe how marine organisms use osmoregulation to control salinity levels within the body.

**Directions**

1. Go to the following web site to read the content, answer the questions, and complete drawings: <http://animalphysiologyprojectt.weebly.com/osmoregulation-in-fish-protists-and-bacteria.html>
   1. Define osmoregulation.
   2. Water likes to diffuse (complete the sentence):
   3. Explain the difference between an osmoregulator and an osmoconformer.
   4. Complete the graphic organizer using the one on the web page
2. Go to the following site to watch an animation of how osmoregulation works in mammals, <http://www.sumanasinc.com/webcontent/animations/content/kidney.html>. Quiz score: \_\_\_\_
3. Now watch the podcast on osmoregulation, <https://www.youtube.com/watch?v=Dtsen_YNwVk>
   1. How do gills help in ion regulation?
   2. Explain other ways fish regulate ion concentrations.
4. Play 3 of the review games and record your score, <http://reviewgamezone.com/game.php?id=5589>
   1. Game 1: \_\_\_\_\_\_\_\_\_\_\_\_ Game 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Game3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_